

minous, as in *Bignoniaceæ*, whereas in those of the *Myoporaceæ* the embryo is always contained within albumen.

After the comparison of these several circumstances, the author is unable to perceive the existence of any marked affinity between *Oxycladus* and any genus of the *Myoporaceæ*, and therefore sees no reason to alter the conclusion at which he formerly arrived, that this genus, although deviating from the usual form of its fruit and seed, bears in every essential respect all the characteristic features of a member of the family of the *Bignoniaceæ*. It is not however in the singularity of the large fleshy cotyledons, or the wingless state of the seed, that *Oxycladus* is remarkable, for Mr. Miers has shown that these occur in other genera of the *Bignoniaceæ*; its peculiarity consists in the development of only one of its many ovules, and in the shape of its cotyledons, which in most other instances are deeply cordate, or almost bipartite at each extremity, with the radicle placed between the lobes: in this genus, however, they are entire, oval, and plano-convex; in *Rhigozum* they are likewise fleshy, orbicular, and entire.

The limits of many genera of *Bignoniaceæ* appear, Mr. Miers adds, ill-defined, and the characters derivable from the seeds much neglected. Fenzl and DeCandolle have done much in extending our knowledge of the family, but the subject still requires farther investigation, for he has observed many singular deviations from recorded structure that have not yet been noticed. Should it be found desirable to class *Rhigozum* with *Oxycladus*, the character suggested for this tribe in his former paper would require modification. In that of the *Crescentiæ*, this name ought to be suppressed, and that of *Tanæciæ* substituted, with the same character there indicated: all the genera of this section of DeCandolle's Prodrômus strictly coincide with the *Bignoniaceæ* in their completely 2-locular ovarium, and in the development of their ovules on the surface of the dissepiment, and they agree also with the genus *Bignonia* in the form of their embryo: *Crescentia* and *Kigelia*, however, present characters wholly at variance with the Order, because of their parietal placentation. He is not, however, persuaded of the propriety of establishing a separate order for these two genera, which has been done upon high authority, when they might so well form a good tribe of the *Cyrtandraceæ*. *Crescentia*, with its large amygdaloid embryo, does not differ more widely from the *Cyrtandraceæ*, than *Adenocalymna* does from *Bignonia*: in habit and in floral structure the two last-mentioned genera are scarcely distinguishable.

BOTANICAL SOCIETY OF EDINBURGH.

July 13, 1854.—Professor Balfour, President, in the Chair.

The following papers were read:—

1. "Notice of a new species of *Caulerpa*," by R. K. Greville, LL.D. &c. This paper will be found in the 'Annals' for September, and in the Society's Transactions.

Professor Edward Forbes remarked, that the plant resembled

the marine *Caulerpites* more than any other described by Brongniart. The genus was interesting, as embracing the *Prasium* of Aristotle, which, until recently translated either a Leek or an Onion, was now known to be *Caulerpa prolifera*, a Mediterranean species.

2. "On the Analogy between the Processes of Reproduction in the Plant and in the Hydroid Zoophyte," by Professor Wyville Thomson. Dr. Thomson stated that the term "Zoophyte" had been originally applied to indicate an intermediate position which these beings were supposed to hold between the animal and vegetable kingdoms; that subsequently their animal nature had been completely made out; and that the old term Zoophyte had then only been retained as an innocent remnant of the superstition of those dark ages; that latterly, however, some strange analogies had been made out between the mode of growth of Zoophytes and of the higher tribes of plants, which seemed to indicate that they had some right to their old designation; that when there was a strong tendency, as in Zoophytes and in Plants, to the indefinite multiplication of similar parts, there was a tendency likewise to the development of these parts according to the same laws. He alluded to the union in these indefinitely repeated parts of the functions of respiration and assimilation in both tribes; to the tendency to spiral arrangement of parts of the polypidom; and to the formation of corpuscles bearing ova, and which are due to the modification or compression of ordinary branches with their buds. Dr. Thomson said that he had had opportunities of observing the process of reproduction in several species of the genus *Campanularia*; he described the peculiar reproductive process in this family, which has been called an "alternation of generations," and alluded to the discovery by Schultze of male individuals of the various species forming capsules containing spermatozoids. He believed that he had been able to make out distinctly three varieties in the development of the medusoids in three species of *Campanularia* (*gelatinosa*, *geniculata*, and *volubilis*). In the first, the capsule of the female individual first appears with a free hollow rod in the centre, like the free central placenta in the *Primulaceæ*. This rod is covered by a partially developed membrane. After a time, a round mass pullulates from this rod beneath this membrane. A communication at first exists between the canal in the centre of the rod, and this globe; this communication is at length closed up, and the projection assumes the form of a true ovarian ovum with a distinct germinal vesicle. The germinal vesicle then disappears, and is gradually replaced by a mass of embryo cells. This mass shows very well the usual process of merismatic division. It afterwards becomes developed into a free ciliated embryo, which fixes closely to a solid body and is quickly developed into a polyp. The contents of the male capsules are formed almost in a like manner, only the original spherical bodies become filled with a substance resembling fovilla, which escapes into the water, without any secondary embryonic formation. In the second species, the embryo is not developed in the capsule, but a mass which Dr. Thomson regarded as homologous with the "ovum" in the former species, is extended from the mouth of the capsule, in

the form of a half-developed medusoid, never becoming detached, but forming the embryo in that position. In the third species, the medusoid was completely developed, and escaped freely into the water. Certain points of resemblance, and their single mode of origin, left no doubt in his mind that the medusoids in the case of *C. volubilis* were only a more highly developed form of the "ova" observed in *C. gelatinosa*, the extreme forms connected by the undeveloped medusoids of *C. geniculata*. It is possible that these three forms of reproduction may not be characteristic of the three species, but may be common to them all under certain modifying circumstances. Dr. Thomson then mentioned the distinction so broadly drawn between the "ovum," the *product* of the true generative process, and the gemma or bud. He suggested that the ovum might be perhaps considered more properly a gemma separated from the parent, and capable of attaining a greater or less development, and that the definition now generally applied to the ovum might be attached to the embryo in its early stages.

The conclusions to which the author seemed inclined to arrive, were,—1. That the medusoids were, in their least developed form, closely allied to the ovarian ovum in the higher animals.

2. That these medusoids, thus resembling the ovarian ovum, might be considered as being produced by a process of gemmation from the parent, and that as free gemmæ they had the power of attaining a considerable degree of development in some species.

3. That these medusoids closely resembled the ovules in plants in their structure and in their mode of development, and that, like ovules, they were sometimes entirely absorbed by the growing embryo while within their capsule, and were sometimes extruded from the capsule when the embryo was extremely small (or even before impregnation?). This property they of course possess in common with the ovarian ovum in higher tribes.

Dr. G. Johnston of Berwick stated, that he differed from Dr. Thomson in regarding the development and reproduction of Zoophytes as indicating an analogy with these processes in plants.

Professor Edward Forbes said, that Dr. Thomson's paper referred to some of the most debateable points in zoology, and that this was not the place to discuss them. He thought that Dr. Thomson had not kept in view the difference between analogy and homology, in drawing a comparison between the zoophyte and the plant.

3. "Notes of a Tour in Switzerland," by John Sibbald, Esq.

4. "Notice of the Discovery of *Hierochloë borealis*, near Thurso," by Robert Dick, Esq. Mr. Dick stated, that at "about ten minutes' walk from the town of Thurso, there is, by the river-side, a farmhouse known by the name of the Bleachfield, opposite to which, on the eastern bank of the river, there is a precipitous section of boulder clay; opposite to the clay cliff, and fringing the edge of the stream, any botanist can, in the last week of the month of May, or in the first and second weeks of June, gather 50 or 100 specimens of *Hierochloë borealis*. Passing upwards along the river bank, and at no great distance, there is another clay cliff, where a few hundreds of

Hierochloë may likewise be got. It also fringes the edge of the river. But the plant must be looked for at the time indicated; for by the third week of June, the beauty of *Hierochloë* has passed away, and by the first week of July the herbage has become so rank, that the Holy Grass, now ripe, and turned of a silky brown, is completely hidden from view. Farther up, between Geize and a section of boulder clay a little below Todholes, the plant may likewise be picked in hundreds. *Hierochloë* has never failed to appear in these localities for twenty years."

5. "On the occurrence of 'Cinchonaceous Glands' in *Galiaceæ*, and on the relations of that Order to *Cinchonaceæ*," by Mr. G. Lawson. This paper will be found in the 'Annals' for September, and in the Society's Transactions.

6. "Notes of a Trip to Inchkeith and Inchcolm," by Professor Balfour. The Professor found upon Inchkeith 132 flowering plants and 6 ferns; on Inchcolm he saw 160 of the former class of plants and 4 of the latter.

The following were the principal plants found on Inchkeith:—*Sinapis nigra*, *Cochlearia danica*, *Geranium pratense*, *Conium maculatum*, *Haloscias scoticum*, *Sambucus (nigra var.) laciniata*, *Silybum marianum*, *Carduus acanthoides*, *Senecio viscosus*, *Hyoscyamus niger*, *Linaria Cymbalaria*, *Marrubium vulgare*, *Habenaria viridis*, *Carex distans* and *vulpina*, and *Sclerochloa maritima*.

On Inchcolm:—*Cochlearia danica*, *Papaver somniferum*, *Cheiranthus Cheiri*, *Dipsacus sylvestris*, *Haloscias scoticum*, *Hyoscyamus niger*, and *Parietaria erecta*.

7. "Observations on the Morphology of Pines," by Professor M'Cosh.

MISCELLANEOUS.

On the Cœnurus cerebralis of the Sheep. By Dr. KÜCHENMEISTER*.

ON the 6th January 1854, at 8 o'clock in the evening, and on the 7th January, at 11 o'clock in the forenoon, I gave some mature proglottides of the *Tænia cœnurus* of the dog to six lambs of from six to nine months old, taken from three different flocks, which were not subject to vertigo. On the 20th January, the animals exhibited the first symptoms of vertigo. They were then successively killed, and presented the following phænomena on examination.

On the seventeenth day after introduction, from twenty to thirty vesicles (*Cœnuri*) inhabited the surface of the brain; the substance of the orain was hollowed into galleries, as though a *Sarcoptes* had been forming its passage; the vesicles were still free and without envelopes, and of the size of a grain of millet.

* The experiments here detailed were made previously to those of Prof. Van Beneden, of which we gave a notice in our last Number. The proglottides employed by the learned Professor of Louvain, were derived from *Tænia*s produced from the *Cœnuri* obtained in these experiments of Dr. Küchenmeister.